

**FACT SHEET FOR NPDES PERMIT
NO. WA-005242-6**

**PORT OF SUNNYSIDE
INDUSTRIAL WASTEWATER TREATMENT FACILITY (IWWTF)**

SUMMARY

The Port of Sunnyside (Port) is seeking issuance of a National Pollutant Discharge Elimination System (NPDES) Permit for its Industrial Wastewater Treatment Facility. This permit will authorize discharges of treated wastewater to surface water and ground water. The Port's IWWTF is currently permitted with a State Waste Discharge Permit for discharge to its land treatment system (or sprayfield), and ultimately, ground water. However, with the soon-to-be-completed construction of an advanced treatment process and the impending discharge to surface water, an NPDES Permit is necessary. This NPDES Permit will address discharges to both surface water and the sprayfield.

The Port treats industrial wastewater from 17 facilities. Since the early 1970s the Port has treated this unique blend of wastewaters in lagoons and a land treatment system. Unfortunately, due to historical land use patterns, wastewater loadings to the sprayfield and the refractory nature of some of the present-day wastewater constituents, there are significant problems with the ground water quality beneath the sprayfield. Specifically, the historical application of agricultural fertilizers at greater than agronomic rates, and the Port's inability to remove dissolved solids from present-day wastewater discharges, has resulted in exceedances of State ground water quality criteria for nitrate, chloride and dissolved solids in the waters beneath the sprayfield. During the current permit cycle, the focus of the Port's and the Department of Ecology's (Department's) efforts have been to address and remedy these problems. As part of the solution to these problems the Port has proposed, and the Department has approved, a two-phased upgrade of the treatment facility. At this time, the Phase 1 upgrade is being implemented. The Phase 1 upgrade involves the addition of a sequencing batch reactor (SBR), resulting in a second treatment train operating in tandem to the existing lagoon system. The Phase 2 upgrade, which will consist of an additional SBR alongside the first, will be constructed as increasing loadings from industry necessitate expansion of the treatment facility.

The Phase 1 upgrade is expected to be operational by January 2005. This upgrade is envisioned by both the Port and the Department to be an interim solution to achieve compliance with the State's surface and ground water quality standards. The Phase 1 discharge will be either to the sprayfield or to the Roza-Sunnyside Board of Joint Control Drain 33.4. The focus of this five year permit cycle will be to allow the Port a reasonable opportunity to achieve compliance with the surface water quality standards. The Port has already committed significant resources towards this goal and anticipates achieving full compliance by the end of this permit cycle. The Port's plan for achieving long term compliance is to lay a pipeline to a constructed wetland to be built on the east bank of the Yakima River. The wetland is expected to aid in the removal of nutrients (nitrogen and phosphorus) in the Port's discharge. The Port has applied to a Federal program for grant funds to construct the wetland. Funding is dependent on a congressional appropriation.

Effluent limits for the discharge to surface water are specified in Special Condition S1.A of this permit. In addition, sprayfield loading limits and ground water enforcement limits are incorporated into Special Condition S1.B of the permit. Discharges to the sprayfield are also regulated through the Land Application Management and Monitoring Plan. In addition, the Port is required to implement a comprehensive monitoring program, including sampling of the discharges to surface water and the sprayfield, sprayfield soils, the vadose zone and ground water.

Additional reports the Port is required to submit during this permit cycle include: a comprehensive set of design criteria for the IWWTF, annual Industrial User Surveys, a Sludge Management Plan, and an engineering report. The first two submittals will provide data to help the Port and the Department in assessing and managing discharges from the tenant industries so that operation of the IWWTF and protection of water quality can be optimized. The Sludge Management Plan will describe the Port's long term management plan for solids generated by the IWWTF. The engineering report will describe the Port's long term plan to achieve compliance with the State's Surface Water Quality Standards.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the State is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Port of Sunnyside
Facility Name and Address	Port of Sunnyside Industrial Wastewater Treatment Facility (IWWTF) 625 Midvale Road Sunnyside, WA 98944
Treatment Processes	Aerated Lagoons, Sequencing Batch Reactor (SBR), followed by either further treatment in a land treatment system or discharge to Joint Drain 33.4
Discharge Location: Outfall 001	Roza-Sunnyside Board of Joint Control Joint Drain 33.4 Latitude: 46° 17' 42" N Longitude: 120° 01' 12" W.
Waterbody ID Number: Outfall 001	No Waterbody ID Number Established for Joint Drain 33.4
Discharge Location Legal Description: Outfall 002	Section 1 and the NE ¼ of Section 12, Township 9 North, Range 22 E. W. M.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

The Port of Sunnyside is located to the south of the City of Sunnyside, approximately midway between the Cities of Yakima and Kennewick. The Port is a municipal corporation that was formed in 1964 to promote industrial and economic development of the area. The Port provides treatment of industrial wastewater to 17 contracted facilities that produce a variety of products. The contracted industries are predominantly food processing facilities that produce goods ranging from cheese to wine. The remaining industries include two tank washing businesses, a hot roll steel mill, and a manufacturer of polyvinyl chloride pipe.

History

The Port has utilized lagoon treatment and land application of its wastewater since the mid-1970s. The treatment system has expanded as more industry has located in the Port. In the fall of 1975 the treatment system included 235 acres of sprayfield with an engineered capacity of 135 million gallons per year. By 1989 the system had grown to 300 acres of sprayfield with a treatment capacity of 187 million gallons per year.

The most dramatic expansion of the treatment system occurred in the early 1990s, with the expansion of the collection system to the north end of Sunnyside and the opening of the Darigold dairy processing plant. In 1989 the Port of Sunnyside was approached by the City of Sunnyside about expanding the Port's IWWTF to include the north end industries. This was done during the

planning for the renovation of the Port's existing IWWTF. In 1990 Darigold made the decision to locate in Sunnyside and connect to the Port's system. With this decision, the plans for renovation changed and the final project required a full Environmental Impact Statement (EIS).

As a result of the EIS study, a second project was required under the mitigation requirements of the EIS, to seal the original lagoons with a plastic liner and increase the aeration of the system by 400 horsepower. This second project was coincident with an expansion of the Darigold plant to include cheese production. The final engineering was for a treatment plant and sprayfield designed to treat over 406 million gallons per year containing not more than 9.9 million pounds of BOD₅ per year and capable of storing 148 million gallons of water during the winter season.

At this time the Port's wastewater treatment facilities consists of four aerated lagoons and a 398-acre land treatment (sprayfield) site. The Port's existing permit authorizes discharge to the sprayfield during the months February through October. During the months November through January, when discharge to the sprayfield is prohibited, the Port must store wastewater in the lagoon system.

The Port is currently upgrading its treatment facilities to allow discharge to surface water during the months of October through June. The upgrade will occur in two phases. At this time (summer 2004) Phase 1 is under construction. Engineering documents for the Phase 1 upgrade have been reviewed and approved by the Department.

The Phase 1 upgrade consists of the addition of a sequencing batch reactor (SBR) process to the treatment train, downstream of Lagoon 1 and upstream of Lagoon 2/3. Lagoon 1 will act as an equalization basin. Piping will be retained to allow bypass of the SBR process. After treatment in the SBR, effluent will be discharged to either Lagoon #4 or the Roza-Sunnyside Joint Board of Control Joint Drain 33.4 (JD 33.4).

The main elements of the Phase 2 improvements include the addition of a second SBR alongside the first unit. The implementation date for the Phase 2 upgrade has not yet been determined.

The Port's plan for long term compliance involves conveyance of SBR effluent through a five mile pipeline to a constructed wetland on the east bank of the Yakima River. The wetland will be utilized to remove nutrients (mostly phosphorus and nitrogen) from the discharge. The Department has not yet received engineering documents for the Phase 2 upgrade. This fact sheet and the associated permit will focus on Phase 1 of the upgrade only, due to the lack of certainty concerning the details of the Phase 2 project and final discharge location or point of compliance.

Collection System Status

The Port operates a wastewater collection system comprised of buried, gravity-flow pipelines which convey wastewater produced by the industries to the IWWTF. The Port's collection

system consists of 5.3 miles of pipe, serving industries within the Port area and in the City of Sunnyside.

Treatment Processes

Current Treatment Train

Wastewaters from the industrial dischargers are conveyed through the collection system to the bar screens at the base of Lagoon #1. After screening, this wastewater is discharged to Lagoon #1 by the lift station pumps. The screened raw wastewater is delivered to the first of three cells for extensive aerobic treatment. The soluble organic materials in the wastewater are partially converted to microbial biomass in the first cell. Wastewater in Lagoon #1 is completely mixed and no solids accumulate on the bottom of this lagoon.

Effluent from Lagoon #1 flows into the second cell (called lagoon #2/3) for further aeration. The second cell contains additional aerators, and can be operated to completely mix the wastewater in this long narrow lagoon basin. Lagoon #4, however, cannot be mixed and suspended solids accumulate in this lagoon.

Flows can be diverted from the influent wet well to any of the downstream lagoons or the sprayfield. The influent pumps can pump directly to lagoon #4, or directly to the sprayfields. From Lagoon #1 wastewater can be diverted to Lagoon #2/3, as it usually is, or to Lagoon #4, or directly to the sprayfields. From Lagoon #2/3 wastewater can be diverted to Lagoon #4 as it almost always is, or sometimes in the fall it is diverted directly to the sprayfields. Lagoon #4 is always discharged to the sprayfield.

Post-Upgrade (Phase 1) Treatment Train

The Phase 1 upgrade will result in a second treatment train operating in tandem to the existing lagoon system. The Phase 1 upgrade will incorporate an SBR process into the existing lagoon and land treatment system. During the warm weather months the SBR process will discharge to the land treatment system and during the non-growing season the discharge will be conveyed to Joint Drain 33.4.

The SBR process will consist of two aerated treatment basins, a flow equalization basin, a sludge storage tank, and associated pumps and equipment. This flow equalization basin is downstream and much smaller than Lagoon #1. Each of the aerated treatment basins will have a volumetric capacity of 1.54 million gallons and will be equipped with a fine bubble diffuser system. SBR effluent will be discharged either to Lagoon #4, for discharge to the sprayfield, or to JD 33.4.

Due to the complexity and unique character of the influent, operational procedures of the SBR treatment process, such as the number of cycles per day, have not yet been determined. The Port's staff will develop these procedures as situations present themselves during day-to-day operations.

The existing treatment facilities, including the influent weir box, lift station and lagoons, will be retained and continue to function in conjunction with the new SBR process.

Land Treatment Site (Sprayfield)

The land treatment system consists of 12 individually managed fields with a total area of approximately 398 acres. The system, and Lagoon 4, are located in the southern half of Section 1 and the northern third of Section 12, Township 9 North, Range 22 E. W. M. Lagoon 4 is in approximately the middle of the sprayfield. The Sulphur Creek Wasteway, a major agricultural return drain, flows to the east of the sprayfield.

The land treatment system is managed as 12 separate fields, each with its own irrigation distribution pipelines. Sprayfield soils are predominantly loamy fine sands and fine sandy loams. Permeability typically ranges from rapid to moderate near the surface and diminishes with depth.

The subsurface beneath the land treatment system is a complex picture of soils, geology and ground water flow. Due to its complexity this fact sheet will present only a brief discussion of the site's subsurface characteristics, and then only those elements related to the Department's primary ground water quality concerns. For more detailed information concerning issues related to the sprayfield's subsurface, the reader is directed to Chapter 11 of the engineering report and the irrigation AKART analysis. See the REFERENCES FOR TEXT AND APPENDICES section of this fact sheet for further information.

Perhaps one of the biggest challenges in managing the Port's land treatment system and evaluating its impacts to ground water is the historical land use patterns of the area. The land within and surrounding the Port's sprayfield has been used for intense agriculture for many years. Silage storage, feed lots, dairy farms, irrigated agriculture, and wetlands caused by a shallow water table are common. Shallow ground water within this area is characterized by irrigation recharge, discharging to local drains, Sulphur Creek Wasteway, and the Yakima River. Ground water is typically encountered within 10 feet of ground surface, and saline soils may occur where extensive evaporative enrichment of salts has occurred.

Local Ground Water Quality

The primary wastewater constituents of concern to the Department are nitrate, TDS and chloride. A number of monitoring wells do not currently comply with permit limits and/or ground water

quality standards for these contaminants. The concentrations of contaminants in the ground water at various monitoring wells are not consistent. A study indicated that the short term change in the concentrations in response to singular irrigation events through the irrigation season are not consistent in any monitoring wells. Ground water quality monitoring began at the site in April 1991. When viewed over the long term, the impacts to ground water quality beneath the sprayfield from the Port's discharges are apparent. An attempt was made to summarize ground water quality beneath the sprayfield; however, constituent concentrations are often so extreme and counter-intuitive to applications of wastewater that the data cannot be effectively summarized. For a more detailed characterization of ground water quality data, which also includes sprayfield loadings, see Appendix B of the AKART Analysis Summary document.

When implemented, the AKART irrigation program approved by the Department is expected to result in the movement of soil water through the root zone and to the ground water because the application of excessive wastewater (greater than evapotranspiration) is required to control soil salinity. The soil water which reaches and mixes with the ground water will contain regulated constituents such as nitrate, dissolved solids and chloride. The effect of soil water constituents on ground water quality beneath the sprayfield cannot be predicted quantitatively with confidence. It is possible that, over the short term, TDS and chloride concentrations in the ground water beneath the sprayfield may increase. The effect on nitrate concentrations cannot be predicted. (AKART Analysis Summary, pp. 2-4) The objective of the AKART irrigation program and the Land Application Management and Monitoring Plan is to improve ground water quality over the long term.

Regional Ground Water Quality

A regional ground water study conducted by the Port in 1997 and 1998 provides some context to the concerns of ground water quality impacted by the sprayfield. The Port conducted an assessment of ground water quality within 5 miles of the sprayfield using push probe technology. Many of the sampling locations are hydrogeologically separate from ground water below the Port's sprayfield; however, because the historical land uses and ground water conditions were similar it was felt the study could provide some context of regional ground water quality.

The study addressed three constituents of concern, nitrate, TDS and chloride, in the shallow (unconfined) aquifer. The resulting data indicated that regional shallow ground water quality is highly variable, and at some locations there are substantially elevated concentrations of TDS, chloride and nitrate. The study found that elevated TDS and chloride concentrations are likely caused by evaporative enrichment of natural water constituents. Evaporative enrichment occurs as a result of normal irrigation practices and through direct evaporation from the water table where the water table is close to the ground surface. The maximum measured concentrations of TDS and chloride were 2,190 mg/L and 310 mg/L, respectively. The applicable ground water quality criteria are 500 mg/L and 250 mg/L, respectively.

In contrast, the predominant inputs of nitrate to ground water in the area are leaching of fertilizers, leaching of manures, and other agricultural sources. The maximum concentrations of nitrate during all three sampling rounds (40 to 70 mg/L) are substantially above natural levels. The State's ground water quality criterion is 10 mg/L. (Engineering Report, Chapter 11)

Discharge Outfalls

The Port's treatment system currently has one discharge point, to the sprayfield. Although wastewater is land applied to various discrete fields through an elaborate array of irrigation lines, the Department considers discharges to the sprayfield as one collective outfall.

This permit authorizes an additional point of discharge to JD 33.4. JD 33.4 is an agricultural return drain owned and operated by the Roza-Sunnyside Board of Joint Control. At the discharge point the drain is actually an underground pipe, approximately 84 inches in diameter, that runs parallel to Midvale Road.

Residual Solids

The Port conducted its first removal of sludge from its lagoon system in Spring 2004. Sludge was removed from Lagoon 2/3 and transported to Natural Selection Farms. In addition, the Port is currently making plans for the removal and disposition of sludge from Lagoon 4, as its accumulation decreases the wastewater storage capacity of the pond.

Concerning management of sludge from the SBR process, the Port will be permitted to discharge all SBR sludge to the sprayfield for an initial three year period of operation. This arrangement will allow the Port an opportunity to optimize the SBR process for the first two years. The Port will utilize the third year to procure sludge processing equipment and optimize its operation, or otherwise address sludge management. SBR sludge will be discharged directly to the sprayfield only during the months of April through October, and the sludge constituents (e. g., nitrogen) will be counted towards the sprayfield loading limits.

This permit requires the Port to submit a sludge management plan to the Department for review and approval.

PERMIT STATUS

The existing permit for this facility was issued on June 1, 1998. The previous permit placed effluent limitations on the discharge to the sprayfield for the following parameters: flow, pH, and total nitrogen. In addition, the permit required soluble 5-day biochemical oxygen demand (SBOD₅) limits to be determined (TBD), by January 2002. However, later studies conducted by the Port and approved by the Department determined that mass loading limits rather than concentration-based limits were more effective in regulating discharges to the sprayfield. See

the GROUND WATER QUALITY LIMITATIONS section of this fact sheet for more discussion of this issue.

Two applications for permit renewal were received by the Department for this facility. The first application, for a State Waste Discharge Permit to address the existing discharge to the sprayfield, was received by the Department on December 23, 2002 and accepted by the Department on January 10, 2003.

The second application, for an NPDES Permit to address the proposed discharge to the surface water, was received by the Department on March 15, 2004 and accepted by the Department on March 23, 2004.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

A compliance inspection without sampling was conducted on May 5, 2004. At that time wastewater was being applied to the sprayfields, and the SBR and ancillary structures were in the early stages of construction.

During the current permit cycle (1998 to the present), the Department has issued one administrative order and several informal warning letters to the Port.

Administrative Order DE 02WQCR-3567 was issued March 6, 2002 to address permit limit violations. The determination in the order states: Ground water monitoring wells installed in the sprayfield disclose that ground water quality under parts of the sprayfield is degraded to the extent that the Port cannot meet current permit limits for nitrate, chloride, and total dissolved solids (TDS). Some wells exceed the criteria in the Ground Water Quality Standards (Chapter 173-200 WAC). A recently submitted engineering report proposes an interim AKART solution, which includes continuing to operate the sprayfield while exploring long term AKART alternatives for treatment and disposal of wastewater.

The order required the Port to:

- Submit to the Department, for review and approval, a comprehensive sampling and analysis plan for ground water that addresses fixed dissolved solids (as a substitute for TDS), chloride and nitrate;
- Limit the discharge of fixed dissolved solids to the sprayfield to 3,963,168 pounds, annually;
- Immediately begin monitoring ground water for fixed dissolved solids at a frequency of twice per month; and,
- Submit the resulting data to the Department on a quarterly basis.

The Port appealed the fixed dissolved solids limit to the Pollution Control Hearings Board (PCHB) on the grounds that the fixed dissolved solids limit was arbitrary and capricious and not

scientifically justified. The Port argued for a limit of 5,812,300 pounds, annually, based on an engineering report completed in 2001.

During the summer of 2002 the Port and the Department negotiated a settlement prior to the PCHB hearing. The settlement agreement is contained in the amended order, issued August 16, 2002. Concerning the fixed dissolved solids limit, the order specifies an annual loading limit of 4,300,000 pounds, effective from the date of issuance of the order to December 31, 2010. Upon completion of construction of the Phase 1 improvements, and after three months of operation demonstrating compliance with the approved engineering report, the annual fixed dissolved solids loading limit will be revised to 4,470,000 pounds. The remaining three elements of the original order were unchanged in the amended order.

Since conclusion of settlement negotiations resulting in the amended order in August of 2002, the treatment facility has been in compliance with the terms of the permit and order, and the Department has not issued any further administrative orders or informal warning letters.

WASTEWATER CHARACTERIZATION

Influent

Aggregate influent loadings, from the 14 current discharging industries to the IWWTF, were reported in engineering reports submitted to the Department and are presented in Table 1. The data are summarized from Table 6-1 of the January 2004 engineering report. These data are presented to illustrate the often enormous variation of influent concentrations and the general trend of increased loadings over time. The variation of influent concentrations is all the more noteworthy because the values in Table 1 are monthly averages; averaging tends to moderate extreme values.

Table 1: Influent Characterization

Parameter	1999 Average (Range)	2000 Average (Range)	2001 Average (Range)	2002 Average (Range)
Flow, in MGD	0.933 (0.548-1.567)	0.827 (0.572-1.467)	0.794 (0.536-1.269)	1.098 (0.931-1.395)
BOD, in mg/L	1826 (1664-2153)	2452 (1763-2794)	2794 (1863-3803)	3194 (2661-4023)
COD, in mg/L	4233 (3690-4666)	5030 (3827-6227)	5354 (4247-6587)	5665 (4650-7041)
TSS, in mg/L	603 (439-996)	719 (536-1042)	769 (515-1090)	674 (500-1158)
Nitrate, in mg/L	9.5 (2.1-24.2)	30.2 (11.2-54.6)	32.1 (13.7-55.3)	36.7 (9.7-64.4)
TKN, in mg/L	71 (43-112)	103 (59-163)	118 (95-159)	107 (67-156)
Total P, in mg/L	29.4 (15.8-44.2)	46.9 (11.1-84.7)	44.3 (23.2-104)	44.5 (19.1-65.3)
Chloride, in mg/L	345 (77-973)	489 (104-1092)	286 (165-511)	374 (165-672)
TDS, in mg/L	2229 (1510-3166)	3287 (2245-4975)	3353 (2175-5615)	3271 (2571-4026)
FDS, in mg/L	No data ^a	No data ^a	1391 (780-2992)	1474 (995-2074)
Definitions: COD means chemical oxygen demand; TKN means total kjeldahl nitrogen; Total P means total phosphorus; FDS means fixed dissolved solids.				
a-The Port was not required to analyze its wastewater for FDS until 2001.				

There are several explanations for the often wide variations in the data. An individual discharger can have several product lines that discharge wastewater at different times with considerably different characteristics. For example, concerning chloride, West Farm Foods produces cheese and powdered whey, which results in wastewater with high chloride concentrations. The company also produces powdered and condensed milk; these discharges contain much lower concentrations of chloride. These products are made in batches; consequently, concentrations of chloride discharged from the same facility can vary widely.

In addition, all food processing facilities are required by law to frequently clean the production equipment using strong acids and bases; the discharge of these cleaning wastewaters can exhibit extreme ranges of pH. To further complicate matters, some facilities operate year-round; others, such as fruit and vegetable processors, run only a few months a year.

Effluent

Discharge to the Land Treatment System

The concentration of pollutants in the discharge to the land treatment system from the existing lagoon system for 2002 was reported in the State Waste Discharge Permit application. The effluent is characterized as follows:

Table 2: 2002 Effluent Characterization

Parameter	Minimum	Maximum	Average
BOD ₅ , in mg/L	26	741	164
COD, in mg/L	235	1,630	514
TSS, in mg/L	48	705	212
TDS, in mg/L	1,420	2,124	1,822
Ammonia, in mg/L	4.8	80.5	42.6
Nitrate + Nitrite, in mg/L	Not Detected	58	10.3
TKN, in mg/L	19	136	63.6
Total P, in mg/L	17	28	23
Chloride, in mg/L	252	503	435

Discharge to Surface Water

It is not possible at this time to provide a precise characterization of the proposed discharge to JD 33.4. Although the Port has operated a rudimentary SBR pilot plant since September 2001, it is uncertain whether the data are representative of effluent the full scale unit will produce. The pilot unit is essentially a 10,000 gallon, cylindrical, underground storage tank, set upright on one end, open at the top, and fitted with aeration. The fact sheet associated with the next permit will contain a characterization of the full scale SBR process after the unit is completed and the Port develops optimal operational procedures to treat its unique wastestreams.

ENVIRONMENTAL REVIEWS

State Environmental Policy Act (SEPA) Review for Existing Land Treatment System

In October of 1990 the Port filed a SEPA checklist for a project at the current site of the sprayfield area. A second checklist was filed in January of 1991 for a proposal to annex the Port of Sunnyside properties in the City of Sunnyside. By October of 1991 a final Environmental Impact Statement (EIS) entitled Expansion of the Port of Sunnyside Industrial Wastewater Treatment Facility had been prepared by PEI/Barrett Consulting Group and submitted to the City of Sunnyside Public Works Department for final development of site specific regulatory

requirements. These earlier environmental reviews are noted because several of the recently developed engineering documents reference the EIS for such basic background information as the characterization of sprayfield soils.

SEPA Review for Phase 1 Upgrade

A SEPA checklist for the Phase 1 upgrade was submitted to the lead agency, the City of Sunnyside, in July 2003. The City issued a Mitigated Determination of Nonsignificance on January 21, 2004. Required mitigation measures related to water quality were the need for an NPDES Permit prior to discharge to surface water and the prohibition of discharging stormwater runoff to JD 33.4 without a permit.

State Environmental Review Process (SERP) for Phase 1 Upgrade

SERP was developed to fulfill the Federal environmental review requirements of the National Environmental Policy Act. Federal environmental review must be conducted because some of the funding the State offers to permittees for infrastructure projects is Federal pass-through money.

The Port solicited comments from a standard list of resource protection, cultural protection and land management agencies at the State and Federal levels. In addition, the Yakama Nation was solicited for comments. All these organizations were contacted in January 2004 by registered mail. In response to concerns expressed by the U. S. Fish and Wildlife Service, the Port hired a consultant to conduct a biological assessment of the project area to describe possible impacts to threatened or endangered species or habitats. The assessment concluded that the project posed no adverse impacts to either endangered species or habitats.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for discharges from publicly-owned treatment works are set by regulation (40 CFR Parts 122 and 133, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be

reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150(1)(g), flows or waste loadings shall not exceed approved design criteria. A summary of the aggregate treatment capacity of the Port's existing treatment facility is presented followed by a brief discussion of each of the facility's main components. The latter discussion also addresses the new SBR process.

System Maximum Capacity

Chapter 10 of the 2003 engineering report contains a discussion of the treatment capacity of the each of the main components of the Port's treatment facility. A brief summary of this chapter is presented in the following paragraphs for the convenience of the reader.

The maximum capacity of the existing treatment facility, which consists of the lagoons and sprayfield, is limited to the maximum capacity of the following components:

1. Storage capacity of Lagoon 4
2. Aeration/odor control capacity of Lagoon 2/3
3. Irrigation capacity of sprayfield.

Table 3 summarizes the maximum capacities of the existing treatment facility. The Maximum treatment capacity of the SBR process is not addressed because its design loadings have not yet been determined. Table 3 appears as Table 10-6 of the engineering report, except that loading limits for FDS were added to Table 3 by the permit writer.

Table 3: Maximum Capacities of Major Treatment System Components

Component	Parameter	Time Period	Maximum Capacity
Lagoon 4	Hydraulic	November through February	24,400,000 cubic feet/year (182,522,700 gallons/year)
Lagoon 2/3	BOD	March through October	6,000,000 pounds/year
Sprayfield	Wet Year Weather Hydraulic	February through October	65,335,100 cubic feet/year (488,740,500 gallons/year)
	Average Year Weather Hydraulic	February through October	71,116,900 cubic feet/year (531,991,400 gallons/year)
	Dry Year Weather Hydraulic	February through October	77,766,100 cubic feet/year (581,730,800 gallons/year)
	Total Nitrogen	February through October	172,000 pounds/year
	BOD	February through October	13,857,400 pounds/year
	FDS	February through October	4,300,000 pounds/year ^a
a-In accordance with amended Administrative Order DE 02WQCR-3567, the Port may request that the sprayfield loading limit for FDS be revised to 4,470,000 pounds, after the SBR process has become operational and achieves the performance standard specified in the order for three consecutive months.			

The storage capacity of Lagoon 4 is a reflection of its volume minus the required freeboard. The aeration/odor control capacity of Lagoon 2/3 is based on operational experience. There have been proposals in the past for the Port to install more aeration capacity in Lagoon 2/3 to address odor control, that would also probably increase BOD treatment capacity, but these plans have not been formally proposed. The irrigation capacity of the sprayfield is influenced by the hydraulic, total nitrogen and BOD capacities of the sprayfield. Furthermore, irrigation capacity can vary significantly, depending on seasonal precipitation, as illustrated in Table 3.

Major Treatment System Components

The following narrative briefly discusses design criteria for each of the three main components of the post-upgrade treatment facility: the lagoon system, the SBR process, and the sprayfield. At this time, design loadings expressed as a range of concentrations have been established for the lagoon system. In addition, design loadings for nitrogen and fixed dissolved solids have been developed for the sprayfield. Hydraulic (flow) design loadings have been established for all elements of the treatment facility because management of flows to the sprayfield have historically been a paramount concern to the Port and the Department. However, the design

criteria for the lagoon system and the SBR process will probably be revised as the Port gains experience operating the SBR process and determines the treatment efficiency of the process.

Lagoon System

All wastewater discharged to the Port for treatment is first collected in Lagoon 1. Table 4 is a summary of the treatment profile of the Port's lagoon system. Table 4 was synthesized from Table 6-2 and Figure 7-5 of the 2003 engineering report. The table illustrates the progressive level of treatment that occurs as wastewater is conveyed through the lagoon system. To provide some context, typical municipal sewage treatment plant influent BOD and TSS concentrations range from 200 to 400 mg/L.

Table 4: 2003-2008 Treatment Profile of Lagoon System

Parameter	Lagoon 1 Influent Range	Lagoon 1 Effluent	Lagoon 2/3 Effluent	Lagoon 4 Effluent
Flow, in MGD	0.90	0.90	0.35	Varies
BOD ₅ , in mg/L	2,435-3,225	1,650	248	62
TSS, in mg/L	715-940	1,340 ^a	536	107
TKN, in mg/L	100-165	120	84	34
NO ₃ , in mg/L	30-85	5	4	4
P, in mg/L	50-60	b	b	b
Chloride, in mg/L	175	b	b	b
FDS, in mg/L	1,200	b	b	b
a-TSS is expected to increase in Lagoon 1 as a byproduct of treatment for BOD.				
b-Some incidental removal of phosphorus, chloride and FDS may occur; however, the lagoon system is not engineered to treat these constituents. The engineering report did not provide any values for these parameters.				

After preliminary treatment in Lagoon 1, approximately 0.35 MGD of partially treated wastewater will receive further treatment in Lagoon 2/3, and the remaining 0.55 MGD will be conveyed to the SBR process for further treatment.

SBR Process

At this time, the Port is constructing Phase 1 of the treatment plant upgrade. During irrigation season the SBR will discharge to the sprayfield, in tandem with the discharge from Lagoon 4. During the remaining months of the year the SBR will discharge to Joint Drain 33.4. Figures 7-4 and 7-5 of the January 2004 engineering report contain the following expected influent and effluent characteristics for the SBR.

Table 5: Design Influent and Effluent Characteristics for the SBR Process

Parameter	Influent	Effluent
Flow, in MGD	0.55	0.49 ^a
BOD ₅ , in mg/L	1,650	60
TSS, in mg/L	1,340	100
TKN, in mg/L	120	Not Applicable
NO ₃ , in mg/L	5	Not Applicable
TKN + NO ₃ , in mg/L	Not Applicable	20
a-The difference between the influent and effluent flow volumes is 0.06 MGD of sludge that will be discharged to the sprayfield in the summer and Lagoon 2/3 in the winter.		

Land Treatment System

Parameters of concern for the discharge to the sprayfield include flow, total nitrogen, BOD and fixed dissolved solids. Maximum design loadings for the sprayfield are presented in Table 3.

In the context of the Port's sprayfield, design loadings, effluent limits and best management practices are comprehensively incorporated into the approved Land Application Management and Monitoring Plan. The plan details design loadings and an elaborate sprayfield management program that the Department anticipates will fulfill the requirements of AKART. Since AKART is implemented as a comprehensive management program to protect ground water quality, a discussion of the Land Application Management and Monitoring Plan is presented in the GROUND WATER QUALITY EFFLUENT LIMITATIONS section of this fact sheet.

Permit Requirement for Aggregate Design Criteria

Aggregate design criteria for the Port's treatment facility, conventionally expressed in the form of pounds per day, have not yet been established. At this time there exists a treatment profile for the lagoon system that are expressed as concentrations (mg/L) (see Table 4) and annual performance-based design loadings for the sprayfield. Design loadings for the SBR will not be known until the process is operational and its ability to treat organic pollutants can be empirically quantified. Unfortunately, design loadings expressed in concentrations or annually do not allow for effective management of the discharging industries, and may have contributed to some of the Port's historical environmental compliance problems.

The Department feels that establishment of design criteria for the entire treatment facility is an important step towards the long term goal of environmental compliance through more effective management of the industrial discharges. After aggregate design criteria for the treatment facility are determined, the Port will be better able to determine how much treatment capacity it

has in reserve and can plan for future expansions in treatment capacity in a proactive manner. The Department will benefit because, as the permitting authority for the discharging industries and the Port itself, permits that it issues can more confidently prevent overloading of the treatment facility and, consequently, better assure compliance with the State's surface water and ground water quality standards.

This permit requires the Port to propose one set of aggregate design criteria for the entire treatment facility and submit them to the Department for review and approval. The Department would prefer design criteria expressed as pounds per day (lbs/day), averaged over a monthly time period. This is the traditional format for expressing design loadings. However, the permit allows the Port to propose design criteria in an alternative format, perhaps over a quarterly (3-month) period, provided the Port justifies its proposal. The Department acknowledges that the treatment facility is a complex system with large-capacity, interdependent processes, a lagoon system that can store wastewater for long periods, and a sprayfield with loading capacities that vary from year to year. The Department intends to allow the Port the flexibility commensurate with such a complex system, but the treatment capacity of the facility must be quantified to allow the Port to better manage the system and the Department to regulate the industrial dischargers.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

This permit contains effluent limits expressed in three forms: SBR discharge limits, mass loading limits (for discharges to the sprayfield), and ground water enforcement limits. The SBR discharge limits are specified in the permit document; mass loading and ground water enforcement limits are incorporated into this permit by reference, through the comprehensive Land Application Management and Monitoring Plan, which is addressed in the GROUND WATER QUALITY LIMITATIONS section of this fact sheet.

SBR Effluent Limits

The following technology-based limits for pH, BOD₅, and TSS are based on the approved January 2004 ER, and are as follows:

Table 6: Technology-based Limits.

EFFLUENT LIMITATIONS: OUTFALL #001	
Parameter	Average Monthly
Flow	0.55 MGD
5-day Biochemical Oxygen Demand (BOD ₅)	60 mg/L; 275 lbs/day
Total Suspended Solids (TSS)	100 mg/L; 459 lbs/day
pH	Between 6.0 and 9.0 at all times.
a-The average monthly effluent limitations shall be based on the arithmetic mean of the samples taken during the calendar month.	

The flow limit has been revised from the value in Table 6 because the Port has learned, through experience operating the pilot plant, that operating the SBR with a longer mean cell residence time than that contemplated in the engineering report gives better treatment. One result of this, however, is that less sludge may be wasted from the system, increasing the volume of treated water to be discharged.

BOD Mass Loading Limits

Monthly effluent mass loadings (lbs/day) are calculated as the maximum monthly design flow (0.49 MGD) x concentration limit (60 mg/L) x conversion factor (8.34) = 245 lbs/day.

TSS Mass Loading Limits

Monthly effluent mass loadings (lbs/day) are calculated as the maximum monthly design flow (0.49 MGD) x concentration limit (100 mg/L) x conversion factor (8.34) = 409 lbs/day.

This permit establishes monthly limits only for BOD and TSS because effluent concentrations may vary considerably during the first two years of operation, due to the variability of the influent and the time needed for the treatment plant staff to optimize operation of the SBR process. At the next permit renewal these monthly limits will be reevaluated, along with the necessity for daily limits.

Nitrogen

In addition to BOD and TSS, the approved engineering report contained effluent limits for TKN and NO₃ in the discharge. However, these TKN and NO₃ limits are not specified in the permit, because this permit cycle is seen by the Department as a period during which the Port will carry out an extensive program to develop the optimal operational procedures for the SBR to treat the Port's unique blend of industrial wastewaters. A frequent byproduct of manipulating a treatment process is that effluent nitrogen concentrations can fluctuate substantially. Furthermore, SBRs typically discharge very low levels of ammonia, the toxic species of nitrogen. The Department feels it is reasonable to defer nitrogen effluent limits for this permit cycle in order to allow the Port the opportunity to optimize operation of its SBR process.

At this time, the State does not have surface water quality criteria for nitrogen, so there is no objective criterion which the Department can use to assess the impact of the Port's discharge. Although the Lower Yakima River is considered by the Department as water quality-impaired for nutrients, and a TMDL is required, the study has not yet begun. The Benton-Franklin Conservation District, with the help of the U. S. Geologic Survey, has recently begun an scientific assessment of the nutrient problem in the Lower Yakima River. It is possible that data generated by this assessment may be the technical basis for a TMDL in the future. For these reasons, the Department feels its premature to assign nitrogen effluent limits to the Port's discharge to surface water. The Department is confident that, at the next permit renewal, enough

data will be developed by the SBR process and the nutrient study that the impacts to water quality can be assessed and, if necessary, effluent limits can be determined.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a State regulation designed to protect the beneficial uses of the surface waters of the State. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Description of the Receiving Water

The facility discharges to Joint Drain 33.4, an agricultural return drain, which is designated as a Class A receiving water in the vicinity of the outfall. In the vicinity of the Port's outfall the drain is enclosed in a 84-inch diameter pipe that is buried along Midvale Road. The Class A designation is made in accordance with WAC 173-201A-120(6), which states 'all . . . unclassified surface waters within the state are hereby classified Class A'. Other nearby point source discharges include West Farm Foods, approximately 200 yards upstream of the Port's outfall, and the City of Sunnyside's sewage treatment plant outfall, approximately 2 miles upstream. Significant nearby non-point sources of pollutants include runoff from agricultural lands and possible undocumented urban storm water discharges. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

The most current (1998), Department-approved 303(d) list of impaired waterbodies does not contain any listings for Joint Drain 33.4. The segment of Sulphur Creek Wasteway (Class B), to which Joint Drain 33.4 discharges, is on the Department's 303(d) list for exceedances of DDT, DDE, DDD, Dieldrin, Alpha-Endosulfan and temperature surface water quality standards.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

This permit allows the Port an opportunity to achieve long term compliance with the State's Surface Water Quality Standards for its proposed discharge from the SBR treatment process to surface water. The Port's interim plan is to discharge to Joint Drain 33.4 and the proposed long

term solution is to discharge to the Yakima River, after treatment to remove nutrients in a constructed wetland.

The wastestreams treated by the Port consist of a unique blend of diverse discharges from various industries. The physical and chemical characteristics can vary greatly, even from a single discharger, as was discussed earlier in the WASTEWATER CHARACTERIZATION section of this fact sheet. The Department acknowledges that the Port is committing significant resources to achieve long term compliance with the surface water quality standards. Although this permit contains effluent limits based on the approved January 2004 engineering report, it is uncertain how well the SBR process will comply with these limits, given the complexity of the wastestreams it will be treating. It is difficult to evaluate compliance with the surface water quality standards when the efficacy of the SBR process is largely unknown. Yet, Federal regulations require a permit to be issued before the discharge can commence.

The Phase 1 upgrade is expected to be operational by January 2005; however, this upgrade is envisioned by both the Port and the Department to be a short term solution to achieving compliance with the State's water quality standards. While the addition of the SBR to the treatment facility is anticipated to greatly improve the effluent quality discharged to the sprayfield and river, it is not known at this time whether the discharge will be in compliance with the surface water quality standards. This permit cycle allows the Port an opportunity to achieve long term compliance with the surface water quality standards. The Port's plan for achieving long term compliance is to lay a pipeline to a constructed wetland to be built on the east bank of the Yakima River. The wetland is expected to aid in the removal of nutrients (nitrogen and phosphorus) in the Port's discharge. The Port has applied to a Federal program for grant funds to construct the wetland. Funding is dependent on a congressional appropriation.

WAC 173-201A-160(4)(a)(1) allows deferral of compliance with the water quality standards during 'construction of necessary treatment capability'. Due to the unique characteristics of the wastestreams to be treated by the SBR process, and the uncertain efficacy of the treatment process, this permit cycle is envisioned by both the Port and the Department as opportunities to determine the efficacy of the SBR process and to achieve long term compliance with the surface water quality standards.

For the above stated reasons, compliance of the discharge with the surface water quality standards was not evaluated. Compliance of the discharge with the water quality standards will be evaluated at the next permit renewal, after the efficacy of the SBR treatment process has been ascertained and the plan for long term environmental compliance has been more firmly resolved.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

Existing Limitations

The existing permit applied limitations on the land treatment system in two forms: sprayfield mass loading limits and ground water enforcement limits. A mass loading limit is essentially an effluent limit expressed in pounds per day or gallons per day. A ground water enforcement limit is the value assigned to a contaminant that triggers corrective actions if it is exceeded. An enforcement limit is often set at a level different from the applicable ground water criterion because it is based on background concentration of the contaminant, as measured by a designated upgradient monitoring well. The existing sprayfield loading limits, as they appear in Special Condition S1, are as follows:

Table 7: Maximum Land Treatment System Loading Limitations

EFFLUENT LIMITATIONS		
Parameter	Maximum Monthly Discharge to the Sprayfield	Maximum Single Measurement
Flow of wastewater discharged to the sprayfield	191 million gallons	8 million gallons/day
pH discharged to the sprayfield	Not applicable	in the range of 5.0 to 10.0
Soluble BOD ₅ discharged to the sprayfield	Not applicable	TBD mg/L Soluble BOD ₅
Total Nitrogen applied to the Sprayfield	600 lbs/acre-year (Annual Total for all Months)	

The above table also contains several footnotes that are not relevant to this discussion. Concerning the 'to be determined' soluble BOD limits, studies conducted by the Port during the last several years concluded that mass loading limits would be more effective way to manage this parameter than a concentration-based limit. The point of compliance for these limits is at the sampler at the head of the irrigation system. All these sprayfield loading limits are vital elements of the sprayfield management plan and will be incorporated into this permit by reference.

The ground water enforcement limits are as follows:

Table 8: Existing Ground Water Enforcement Limitations

Parameter	Value Not to be Exceeded in Two Consecutive Months ^a	Date Limits Became Effective
Nitrate in the Ground Water	9.1 mg NO ₃ -as N/L ^b	January 1, 2002
Total Dissolved Solids in the Ground Water	1003 mg TDS/L ^b	January 1, 2002
a-This limit shall apply to all ground water monitoring wells except MW #9 and MW #13, which are upgradient wells. Two consecutive exceedances of the enforcement limit at the same well constitute a permit violation.		
b-In the event of an exceedance, after the January 1, 2002 enforcement date, the Port of Sunnyside shall: <ol style="list-style-type: none"> 1. Provide immediate verbal notification to the Department's Central Regional Office, Water Quality Program; 2. Resample the well(s) within 48 hours of receiving the laboratory report; 3. Provide written notification with the next monitoring report; and 4. Prepare a report documenting conditions and describing actions taken and planned to reduce the nitrate level to below 9.1 mg/L or the TDS level to below 1003 mg/L as measured at the well(s) where the exceedance was observed. 		

Proposed Permit

Proposed permit limitations associated with the sprayfield are expressed in several forms. Limits are expressed as (1) maximum allowable loadings to the sprayfield, as determined in the engineering report, (2) ground water enforcement limits, and, (3) management options in the Land Application Management and Monitoring Plan. The maximum allowable loadings and the ground water enforcement limits are in S1.B of this permit.

The maximum allowable loadings to the sprayfield (1) were developed in the AKART analysis to represent the maximum assimilative capacity of the sprayfield for various discharge constituents. The regulated parameters are flow quantity, nitrogen, BOD, FDS and TDS. These discharge characteristics represent the 'parameters of concern' to the Department in its goal to protect ground water quality.

The nitrate and TDS ground water enforcement limits (2) in this permit were retained from the previous permit. These limits were established using a statistical method and data from upgradient (background) monitoring wells. The chloride limit of 250 mg/L has been added to this permit and is the State ground water criterion for this pollutant.

Permit limits are incorporated into the structure of the Land Application Management and Monitoring Plan (3). Due to the importance of this plan in managing the sprayfield to protect ground water quality, the plan is discussed in some detail in the following section.

This permit establishes a maximum daily limit for soluble BOD₅ of 15 lbs/acre/day. This limit is based on the best professional judgment of the Department's Central Regional Office Engineer and Hydrogeologist. This limit is expected to be protective of ground water quality.

Land Application Management and Monitoring Plan

Both the Department and the Port have recognized the necessity for a more comprehensive sprayfield management plan for many years. A more elaborate plan than can be practically included in a permit is needed for sprayfield management for many reasons. These include the dynamic (living) nature of the sprayfield crop being grown and microorganisms resident in the soil, unpredictable natural precipitation, complex hydrogeology, and the need to carefully manage salinity and nitrogen levels in the soil with varying amounts of irrigation. During the years since the existing permit was issued the Port and the Department have worked together to develop a sprayfield management plan, the Land Application Management and Monitoring Plan. The basic goals and general outline of the Port's sprayfield management program are summarized in Chapter 9 of the engineering report as:

- Maintain soil salinity in a desirable range.
- Reclaim sodium affected areas.
- Minimize impacts of nitrate on ground water quality.
- Achieve reasonable biomass production.
- Maximize application uniformity.
- Optimize hydraulic loading.

A brief discussion of two of the goals may provide some insight into the complexity of sprayfield management. Maintaining soil salinity in a desirable range is a high priority for managing the sprayfield. This presents the Port with its greatest challenge because food processing industries generate high concentrations of dissolved solids and chlorides, but these substances are extremely difficult to treat utilizing conventional wastewater treatment technologies.

Application of pollution prevention (P2) measures to industrial processes is the first step that can be taken to reduce dissolved solids and chlorides in wastewater. Stringent water management will prevent accumulation of damaging soil salinity while minimizing impacts of dissolved solids to the ground water.

Nitrate is the primary wastewater constituent treated in the sprayfield. Although it is impossible to prevent some nitrate from reaching ground water, impacts can be minimized. The Port's water management strategy is to prevent elevated soil nitrate, to promote biomass production and avoid leaching during the spring when seasonal nitrate levels tend to peak.

Levels of soil salinity and nitrate must be carefully managed to prevent and/or minimize migration of these pollutants, but if salinity becomes excessive the sprayfield soils will be ruined. However, an appropriate level of soil moisture must be maintained to satisfy crop needs.

The plan's first section, Sprayfield Management, contains discussions of management objectives addressing hydraulic and constituent loadings, vegetation, and soil salinity. Section 2 specifies the sprayfield monitoring program. The plan specifies monitoring of soil, vadose zone, ground water and the Sulphur Creek Wasteway, which is on the southeast boundary of the sprayfield. Section 3 contains the Quality Assurance Program Plan, which describes the sampling and analysis procedures and protocols required to assure good quality monitoring data.

Reports required by the Department, and their frequencies of submission, are listed in Section 4. The reporting requirements are as follows:

Table 9: Land Treatment System Reporting Requirements

Monitoring Report	Frequency of Submission
Ground Water Quality: Monitoring Wells	Monthly
Surface Water Quality	Monthly
Vadose Zone Water Quality	Annually
Soil Chemistry	Annually
Nitrogen Loading to, and Removal from, Each Field	Annually
Hydraulic Loading vs. Evapotranspiration	Annually
Ground Water Equal Potential Contours before Irrigation Season and after Irrigation Season	Annually

The purpose of monitoring the soil and vadose zone of the sprayfield, the shallow ground water beneath it, and the surface water adjacent to it, is to verify that the sprayfield is being operated in a manner that will comply with regulatory criteria. These criteria include ground water quality standards at the compliance wells, and the early warning values in the soil and ground water. Thus, data collected in the course of this monitoring will be used to establish the following:

- Verify that nitrate and TDS concentrations in the compliance monitoring wells do not exceed the permit ground water enforcement limitations for two consecutive months. The compliance monitoring wells are MW-2, MW-15 and MW-16. The permit ground water enforcement limits are 9.1 mg/L nitrate as nitrogen and 1003 mg/L TDS.
- Verify that chloride concentration does not exceed the ground water quality criterion of 250 mg/L in the compliance monitoring wells.

- Verify that the spring mean nitrate concentration of the top four feet of sprayfield soil is less than, or equal to, 13.5 mg/Kg (milligrams per Kilogram).
- Verify that the mean of the ground water nitrate concentrations for the period of November through February in each of the monitoring wells, other than the compliance monitoring wells, is less than, or equal to, 6 mg/L.

The Corrective Action Plan is described in Section 5. The Corrective Action Plan details actions to be taken by the Port in the event specified threshold values are exceeded. Nitrogen applied to the sprayfield and nitrate present in ground water provide much of the focus of the plan. Subsection 4 (p. 22) provides a representative example of the structure of the plan:

If the mean spring nitrate concentration of the top four feet of sprayfield soil is greater than 13.5 mg/Kg:

- Eliminate those fields with elevated soil nitrate concentrations from the calculation of the mean value. Limit nitrogen loading to these fields to less than 432 pounds per acre during the next irrigation season.
- If the mean winter ground water nitrate concentration in any of the remaining fields exceeds 6 mg/L, limit nitrogen loading to those fields to less than 432 pounds per acre during the next irrigation season.
- To those fields contributing to the sample population whose mean soil nitrate concentration does not exceed 13.5 mg/Kg, and whose mean ground water nitrate concentration does not exceed 6 mg/L during the period of November through February, do not exceed nitrogen loading of 600 pounds per acre during the next irrigation season.

Further details of the Port's sprayfield management program can be found in the Land Application Management and Monitoring Plan.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT

This permit contains two sets of effluent limits: SBR discharge limits and sprayfield limits. The existing permit has no SBR discharge limits because this treatment process is a new addition to the facility. The SBR discharge limits established in the proposed permit are presented in Table 6 of this fact sheet.

Discharges to the land treatment system are regulated by hydraulic and organic loadings in accordance with the Land Application Management and Monitoring Plan. Loadings to the sprayfield are adaptively managed because they are based on a suite of variables, including soil moisture and residual nutrients from the previous irrigation season, the anticipated crop needs for the upcoming season, and the levels of nitrogen found in the ground water during the most recent

sampling events. In any case, discharges to the sprayfield may not exceed the maximum design loadings in Table 3.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

This permit requires the Port to carry out an extensive monitoring program. The complexity of the monitoring program is partially due to the fact that the treatment facility consists of a combination of three major treatment processes; any one of these processes would normally require a substantial monitoring program. An additional factor contributing to complexity of the monitoring program is the challenge of quantifying the treatability of the Port's unique blend of wastewaters, especially in a dynamic and somewhat unpredictable process like the sprayfield.

Influent and effluent monitoring schedules for the mechanical portions of the treatment facility are detailed in the proposed permit under Special Condition S2. These elements of the treatment facility include the lagoon system, the SBR process and the discharge to the sprayfield. Monitoring of sprayfield soils, the vadose zone, ground water and the Sulphur Creek Wasteway are detailed in the Port's Land Application Management and Monitoring Plan, and are incorporated into this permit by reference.

The required monitoring frequency for the discharge to surface water from the SBR process is consistent with agency guidance given in the current version of Ecology's Permit Writer's Manual (July 1994) for an activated sludge plant with a design flow of less than 2 MGD. The monitoring frequencies are taken from Table XIII-1C (p. XIII-38) of the manual. The permit requires sampling for several parameters, including dissolved solids and phosphorus, that are not usually monitored in surface water discharges. Dissolved solids are parameters of concern for the sprayfield and nutrients are parameters of concern in the Yakima River. Treatment in the SBR process is not anticipated to result in significant removal of dissolved solids or soluble phosphorus. However, quantification of these discharge constituents is necessary to provide data for determining system-wide mass balance calculations for these constituents.

This permit also requires intensive monitoring of influent and effluent nitrogen species, at least during the initial portion of the permit cycle. This is due to the need to quantify the treatment capacity of nitrogen in the SBR process and to provide data for determining system-wide mass balance calculations for nitrogen, which is a pollutant of concern in both surface water and ground water.

Parameters and sampling frequencies for the discharge to the sprayfield, soils, the vadose zone and ground water reflect the Department's mandate to protect groundwater quality. The monitoring program for wastewater applied to the sprayfield has been expanded in this permit to include dissolved solids, TKN and nitrate. Since issuance of the previous permit dissolved solids and nitrogen in ground water have emerged as pollutants of concern to the Department and enhanced monitoring of these parameters will provide data to better evaluate any impacts the discharge may have to ground water. The soil and vadose zone monitoring schedules are detailed in the Land Application Management and Monitoring Plan and are incorporated into this permit by reference. This arrangement was established to allow the Department and the Port flexibility to modify this monitoring as conditions require, since the Department does not have the resources to reissue the permit for every change in the monitoring program. Ground water monitoring is detailed in Special Condition S2.D. The ground water monitoring program has been expanded to include analysis of cations and anions, fixed dissolved solids, and TKN. In addition, the Port is required to sample an array of domestic wells outside its boundaries.

The Port is required to monitor the Sulphur Creek Wasteway and Joint Drain 33.4. The wasteway flows along the southeast boundary of the sprayfield. Ground water beneath the sprayfield and the wasteway are in hydraulic continuity. The Port will sample upstream and downstream of the sprayfield to determine what, if any, impacts ground water quality has to surface water quality. Monitoring of Joint Drain 33.4 upstream of the Port's outfall will provide data to help evaluate the impact of the discharge to surface water quality.

The Department anticipates that after an initial shakedown period of perhaps two years, once trends in the treatability of the wastewater and effluent characteristics become apparent, that the monitoring program associated with the SBR process may be reduced. The permit provides this option in the Request to Reduce Monitoring Frequency, in Special Condition S2.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, Accreditation of Environmental Laboratories. The Port's laboratory is accredited for the following parameters:

Table 10: List of Accredited Parameters

Ammonia	DO	NO ₃ + NO ₂	Phosphorus
BOD/CBOD	Fecal Coliform Bacteria	TKN	TDS
Calcium	Hardness	Orthophosphate	TSS
COD	NO ₃	pH	Specific Conductance
Chloride			

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The provisions of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in Special Condition S4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Special Condition S4. restricts the amount of flow.

This permit requires both an annual Industrial User Survey and an annual Wasteload Assessment. Although these submittals appear redundant, they address different concerns of the Department. These submittals overlap in one sense, the loadings received by the IWWTF at the headworks; otherwise, they are complementary in purposes. The purpose of the Industrial User Survey is to compare the contracted allocations the Port assigns to each industry with the loadings each actually discharges. The survey helps to address the Department's pretreatment concerns and the discharges' impacts to the IWWTF. The Wasteload Assessment takes up where the survey leaves off, at the IWWTF headworks, and compares loadings to the IWWTF to the design criteria of the three main treatment processes. In the event the discharge limits of a treatment process is exceeded on a chronic basis, the Port must explain in the assessment document the steps taken to avoid future exceedances. A third assessment requirement in this permit, the Plan to Maintain Adequate Capacity, is not triggered until design criteria are exceeded for three consecutive months.

Special Condition S6.E.3 prohibits certain discharges, such as stormwater or noncontact cooling water, to the IWWTF that can hydraulically overload the treatment system. The operative words in the permit condition are that these discharges not *significantly interfere* with the treatment processes, or result in upset. The Port accepts stormwater and noncontact cooling water from some of its industries, but these discharges have historically been successfully managed to prevent such disruptions. Therefore, this permit does not contain any additional restrictions on these discharges beyond the generic requirements in the permit.

ENGINEERING REPORT

Special Condition S8 requires submittal of an engineering report to determine the Port's intention to achieve compliance with the State's Surface Water Quality Standards (Chapter 173-201A

WAC). The permit requirement was written to be flexible enough to fit any of the possible scenarios that may develop during the upcoming permit cycle. For instance, although the Port is presently committed to developing a discharge option to the Yakima River to the extent that the required riverfront land has been purchased, the congressional appropriation to fund construction has not been obtained.

In the event the Port chooses to build a pipeline to the Yakima River and discharge to a constructed wetland, the engineering report must discuss the applicable water quality standards and propose the point of compliance and the means to verify compliance. A key part of the discussion will be the point of compliance with the applicable water quality standards. In order to receive the Department's approval for the project, the Port will also need to propose a means to verify compliance with the water quality standards, including any wasteload allocations resulting from TMDL Studies.

The lower Yakima River is considered water quality-impaired for nutrients, and the Department anticipates conducting a TMDL that will likely result in a low-level wasteload allocation (mass loading effluent limit) for phosphorus. Compliance with a wasteload allocation for phosphorus will require the Port to verify compliance: 1) at the discharge point to the constructed wetland, or 2) at the point where the wetland discharges into the river. In any case, the Department will not assume compliance without verification. The Department will only approve an engineering report that anticipates compliance with the applicable water quality standards and provides the means to verify that compliance.

In the event the Port decides not to pursue the wetland project and continues its SBR discharge to JD 33.4 on a long term basis, or decides to build an outfall to Sulphur Creek, then the engineering report must address compliance with the numeric and narrative water quality criteria. Key parameters may include fecal coliform bacteria, turbidity, chloride and nutrients. In addition, the discharge must comply with the antidegradation requirements in the revised surface water quality standards that are soon to be approved by the U. S. EPA. The Department is not requiring the Port to comply with the current antidegradation regulations because the Phase 1 SBR project is an *interim* solution to the Port's overloading of the sprayfield. Furthermore, the State does not currently have numeric criteria for nutrients and the establishment of wasteload allocations for nutrients are probably at least 5 years into the future.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Special Condition S5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The Port submitted a draft O&M Manual for the SBR process in September 2004. This submittal was made in accordance with the requirements of loan contract with the State. The draft manual is incomplete because some of the details of construction and operation have not been determined. The loan contract requires that a final O&M Manual be submitted to the Department when 90 percent of construction has been completed, which is required by Special Condition S5.E of the permit.

In addition, this permit requires submittal of an updated O&M Manual with the next application for permit renewal. This update is required to describe any last minute design changes incorporated into the SBR process and the empirical experience gained from operating and maintaining this treatment process. Documentation of this experience is vital because the mix of wastewater streams discharged to the IWWTF is unique and the Port has not previously operated an activated sludge treatment process, so this information will be very useful for future treatment system operators hired by the Port.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in Special Condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 173-350 WAC, "Solid Waste Handling Standards". The disposal of other solid waste is under the jurisdiction of the Yakima County Health Department.

This permit requires the Port to submit to the Department a Sludge Management Plan for review and approval. The submittal date of the plan is approximately two years into this permit cycle because the Port will not be able to quantify the characteristics of its sludge management program until operation of the SBR process has been optimized and the impacts of discharging sludge to the sprayfield is assessed.

PRETREATMENT

A clarification of terminology is necessary for this section of the fact sheet. All other sections of this fact sheet and the proposed permit describe the Port's treatment plant as the Industrial Wastewater Treatment Facility, or IWWTF. The term IWWTF was created to differentiate it from the City's Publicly-Owned Treatment Works, or POTW. The IWWTF is, in fact, a publicly-owned treatment works because the Port is a public entity. However, this section of the fact sheet refers extensively to pretreatment responsibilities in the applicable Federal and State regulations, and the Department felt that substituting IWWTF for POTW may lead to confusion for the reader when referring to the regulations, so the term used in the regulations (POTW) is used in this section.

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the “Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10” (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program (i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)). Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users (SIUs) discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department has delegated to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing SIUs (40 CFR 403.8 (f)(1)(i)).

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (WAC 173-216-110(5)). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g., tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from

accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of its responsibilities regarding application for a State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

Requirements for Performing an Industrial User Survey

This POTW serves significant industrial and commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of State waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be processed into a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users. A complete listing of methodologies is available in the Department of Ecology guidance document entitled "Conducting an Industrial User Survey".

This permit requires the Port to conduct an annual Industrial User Survey. At a minimum, the survey is required to list each of the industrial facilities discharging to the Port's treatment system, its annual hydraulic and organic contract allocations, and the total discharges from each facility for the reporting period. In the event a discharger exceeded its contract allocation, or otherwise violated its contract, the survey must describe the circumstances and the measures taken to prevent a reoccurrence.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the collection system. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

GENERAL CONDITIONS

General Conditions are based directly on State and Federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended State or Federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five (5) years.

REFERENCES FOR TEXT AND APPENDICES

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2004. Port of Sunnyside Industrial Wastewater Treatment Facility Addendum to Engineering Report.
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1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
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1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

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Metcalf and Eddy.

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2004. Port of Sunnyside Industrial Wastewater Treatment Facility Land Application Management and Monitoring Plan.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations (<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A -- PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department published a Public Notice of Application and Draft (PNOA/D) on December 7, 2004 and in the Sunnyside Daily Sun News to inform the public that an application, draft permit and fact sheet were available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

This permit and fact sheet were written by Jim LaSpina.

APPENDIX B -- GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for “all known, available, and reasonable methods of prevention, control, and treatment”.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C -- RESPONSE TO COMMENTS

Comments to the draft permit and fact sheet were received from the Port of Sunnyside only. Both of the Port's comments addressed incomplete revisions to an earlier draft.

Comment:

Special Condition S1.B.1.b of the permit stipulates that the maximum hydraulic "discharge to the sprayfield shall not exceed the PAWS evapotranspiration rate . . ." (Permit page 7 of 35) It is correctly noted in the fact sheet, however, that "the application of excessive wastewater (greater than evapotranspiration) is required to control soil salinity". (Fact sheet page 11 of 53)

Since the allowable volume of wastewater, including amounts that exceed evapotranspiration, is determined pursuant to the Land Application Management and Monitoring Plan, the Port requests that Permit Special Condition S1.B.1.b be modified to require that hydraulic loading to the sprayfield "shall not exceed the volume calculated in accordance with the most recently approved Land Application Management and Monitoring Plan".

Response:

Special Condition S1.B.1.b of the permit authorizes the maximum hydraulic loadings to the sprayfield, as established in the 2003 engineering report, and serve as the hydraulic design loadings for the sprayfield. The reference to the PAWS evapotranspiration rate should have been removed during an earlier revision of the permit because, at times, the application of excessive wastewater is necessary to control soil salinity. The Land Application Management and Monitoring Plan details options for day-to-day sprayfield management, but the maximum authorized hydraulic loadings are detailed in the engineering report, not the plan. The reference to the PAWS evapotranspiration rate has been removed from Special Condition S1.B.1.b of the permit, and the sentence now reads:

Beginning on **the effective date** and lasting **through the expiration date of this permit**, the Permittee's discharge to the sprayfield shall not exceed the following maximum hydraulic loading limitations.

Comment:

The Port understands that the Department does not plan to modify the fact sheet. Nevertheless, the Port suggests a clerical correction to the mass loading calculations for BOD and TSS shown on Fact Sheet page 24 of 53, so that they agree with the Effluent Limitations presented in Table 6. In other words, the maximum flow should be 0.55 MGD, and the mass loadings should be 275 lbs/day for BOD, and 459 lbs/day for TSS.

Response:

At this time, the fact sheet cannot be modified, in accordance with State and Federal regulations. The corrected fact sheet narrative should read as follows:

BOD Mass Loading Limits

Monthly effluent mass loadings (lbs/day) are calculated as the maximum monthly design flow (0.55 MGD) x concentration limit (60 mg/L) x conversion factor (8.34) = 275 lbs/day.

TSS Mass Loading Limits

Monthly effluent mass loadings (lbs/day) are calculated as the maximum monthly design flow (0.55 MGD) x concentration limit (100 mg/L) x conversion factor (8.34) = 459 lbs/day.